1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$5 - 3i \text{ and } 2$$

A. $b \in [-9, 6], c \in [0, 6],$ and $d \in [-9, 1]$

B. $b \in [10, 13], c \in [52, 62],$ and $d \in [68, 76]$

C. $b \in [-14, -11], c \in [52, 62],$ and $d \in [-76, -62]$

D. $b \in [-9, 6], c \in [-13, -1],$ and $d \in [4, 16]$

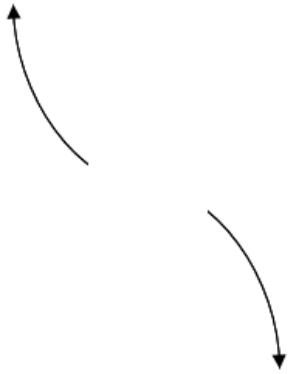
E. None of the above.

---

2. Describe the end behavior of the polynomial below.

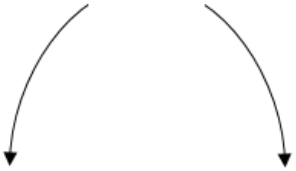
$$f(x) = 8(x + 3)^3(x - 3)^8(x - 2)^3(x + 2)^4$$

A.

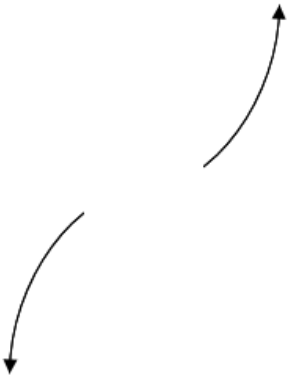


C.

B.



D.



E. None of the above.

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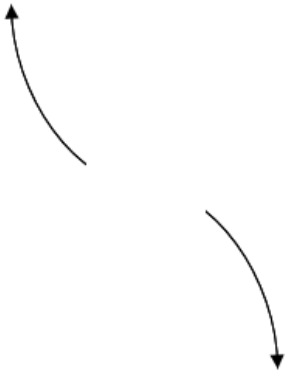
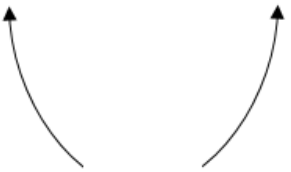
3. Describe the end behavior of the polynomial below.

$$f(x) = 7(x-4)^4(x+4)^5(x+3)^3(x-3)^5$$

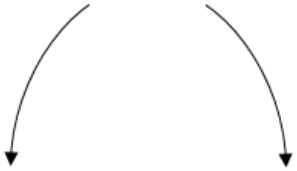
A.



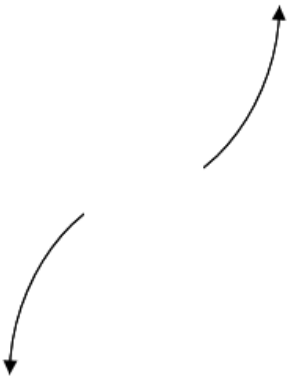
C.



B.



D.



E. None of the above.

---

4. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$7, \frac{-1}{5}, \text{ and } \frac{2}{3}$$

A. $a \in [15, 17], b \in [110.6, 112.3], c \in [44, 57],$ and $d \in [-17, -12]$

B. $a \in [15, 17], b \in [91.8, 95.9], c \in [-92, -82],$ and $d \in [14, 19]$

C. $a \in [15, 17], b \in [-112.5, -108.4], c \in [44, 57],$ and $d \in [14, 19]$

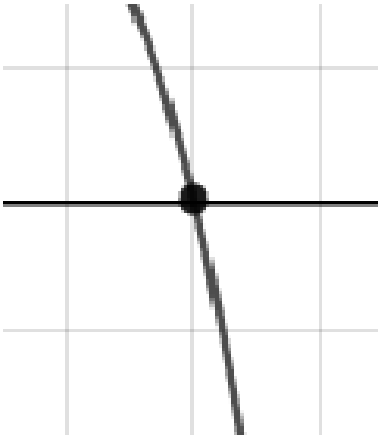
D. $a \in [15, 17], b \in [96, 100.8], c \in [-52, -44],$ and $d \in [-17, -12]$

E. $a \in [15, 17], b \in [-112.5, -108.4], c \in [44, 57],$ and $d \in [-17, -12]$

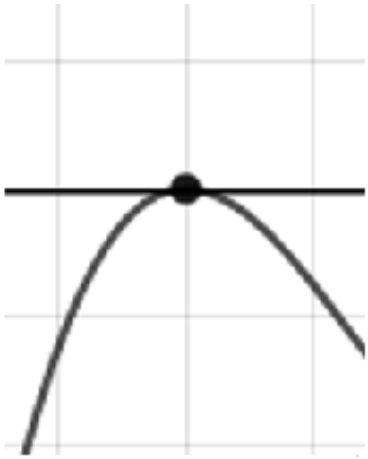
---

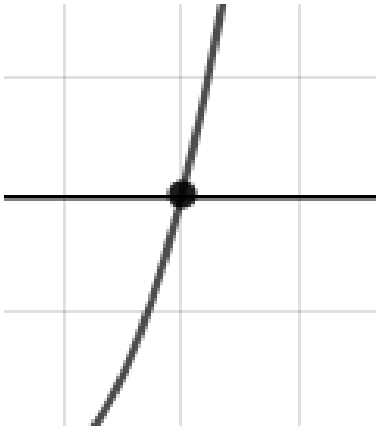
5. Describe the zero behavior of the zero $x = 2$ of the polynomial below.

$$f(x) = -3(x+2)^4(x-2)^5(x-7)^5(x+7)^7$$

A. 

C. 

B. 

D. 

E. None of the above.

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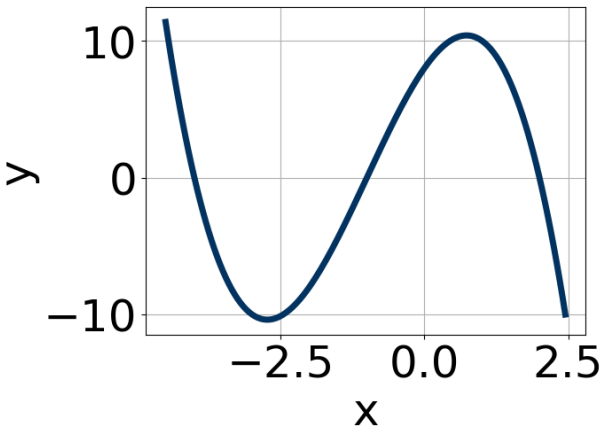
6. Which of the following equations *could* be of the graph presented below?



A. $-8(x-2)^{10}(x+4)^{6}(x+1)^{5}$

B. $12(x-2)^{8}(x+4)^{7}(x+1)^{7}$

C. $-4(x-2)^{10}(x+4)^{11}(x+1)^{11}$

D. $11(x-2)^{7}(x+4)^{9}(x+1)^{9}$

E. $-10(x-2)^{5}(x+4)^{7}(x+1)^{11}$

---

7. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$4 + 5i \text{ and } 1$$

A. $b \in [-11, -5], c \in [48.79, 49.11],$ and $d \in [-41.09, -39.64]$

B. $b \in [1, 6], c \in [-5.16, -3.28],$ and $d \in [2.13, 4.62]$

C. $b \in [1, 6], c \in [-6.36, -5.54],$ and $d \in [4.44, 5.18]$

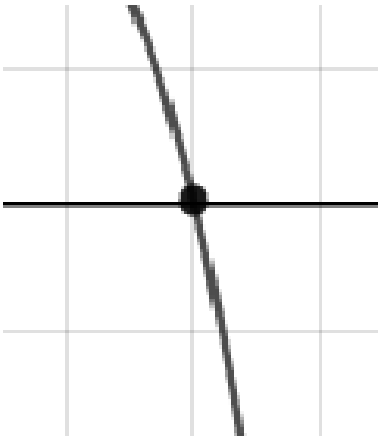
D. $b \in [3, 14], c \in [48.79, 49.11],$ and $d \in [39.48, 43]$

E. None of the above.

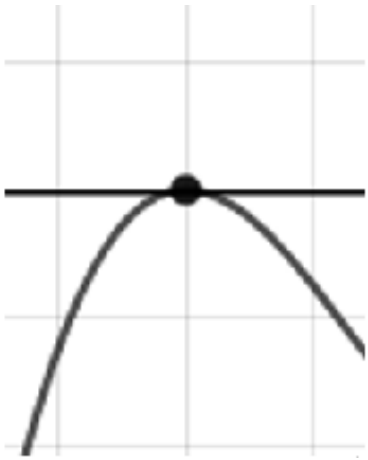
---

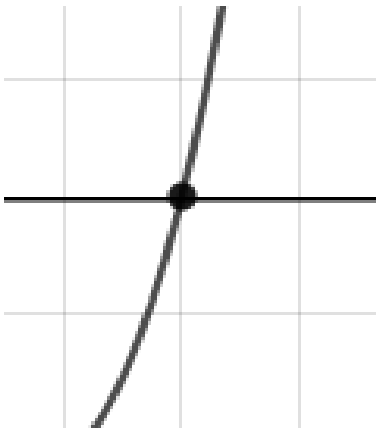
8. Describe the zero behavior of the zero $x = -7$ of the polynomial below.

$$f(x) = -9(x-4)^{5}(x+4)^{2}(x+7)^{11}(x-7)^{8}$$

A. 

C. 

B. 

D. 

E. None of the above.

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9. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$-1, \frac{-4}{5}, \text{ and } \frac{3}{5}$$

A. $a \in [19, 32], b \in [28, 33], c \in [-10, -3],$ and $d \in [12, 19]$

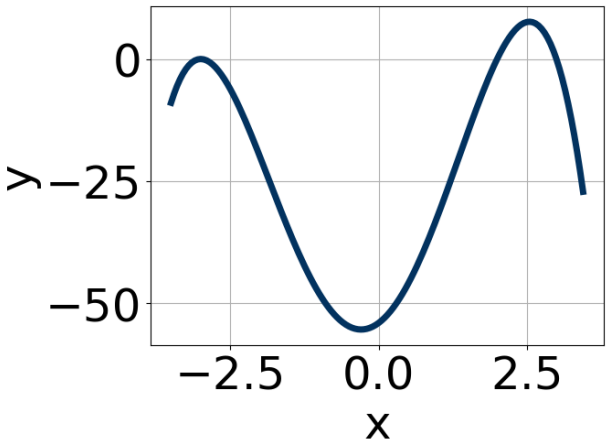
B. $a \in [19, 32], b \in [-26, -18], c \in [-20, -16],$ and $d \in [12, 19]$

C. $a \in [19, 32], b \in [-64, -56], c \in [45, 49],$ and $d \in [-12, -9]$

D. $a \in [19, 32], b \in [28, 33], c \in [-10, -3],$ and $d \in [-12, -9]$

E. $a \in [19, 32], b \in [-32, -26], c \in [-10, -3],$ and $d \in [12, 19]$

10. Which of the following equations *could* be of the graph presented below?



A. $12(x+3)^8(x-2)^{11}(x-3)^9$

B. $-19(x+3)^6(x-2)^{10}(x-3)^{11}$

C. $-20(x+3)^9(x-2)^6(x-3)^9$

D. $6(x+3)^4(x-2)^{11}(x-3)^4$

E. $-5(x+3)^6(x-2)^5(x-3)^9$